AD-773 023

U. S. ARMY HELICOPTER HYDRAULIC SYSTEM RELIABILITY AND MAINTAINABILITY INVESTIGATION, VOLUME II. SUPPLEMENTAL DESIGN GUIDE

James L. Huffman

Systems Associates, Incorporated

Prepared for:

Army Air Mobility Research and Development Laboratory

September 1973

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
Systems Associates, Inc. 444 West Ocean Boulevard Long Beach, California	UNCLASSIFIED 2b. GROUP N/A

3. REPORT TITLE

U.S. ARMY HELICOPTER HYDRAULIC SYSTEM RELIABILITY AND MAINTAINABILITY INVESTIGATION, VOLUME II, SUPPLEMENTAL DESIGN GUIDE

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final Report

5. AUTHOR(S) (First name, middle initial, last name)

James L. Huffman

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
September 1973	211	206

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
DAAJ02-73-C-0013 b. PROJECT NO. Task 1F62205A11903 c. d.	USAAMRDL Technical Report 73-63B 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) SAI Report R73-005

10. DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
Volume II of a two-volume report	Eustis Directorate U.S. Army Air Mobility R&D Laboratory Fort Eustis, Virginia

13. ABSTRACT

This volume, entitled "Supplemental Design Guide", is a result of the investigation performed in Volume I, "Document Deficiency Analysis", of this report, which identifies deficiencies in military specifications and standards that may impact the reliability and maintainability of U.S. Army helicopters.

This volume provides supplementary information for each deficient document relating to design requirements, qualification testing, and quality assurance. The supplementary information to offset the most prevalent deficiencies addressed helicopter mission design requirements which relate to environmental conditions, reliability and maintainability programs, and safety. Environmental testing and reliability and maintainability requirements were also addressed.

This supplementary information may be used for future U.S. Army helicopter development programs and may be incorporated into existing hydraulic system-related documents.

DD FORM 1 NOV 68 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Hydraulic System						
Design Requirements						
Document Deficiencies						
Documentation Tree						
Electromagnetic Interference						
Environmental Conditions						
Human Engineering						
Interchangeability						
Maintainability						
Mission Requirements						
Product Identification						
Qualification Testing						
Quality Assurance						
Rejection and Retests						
Reliability						
Safety						
Standard Components						
Workmanship						

DISCLAIMERS

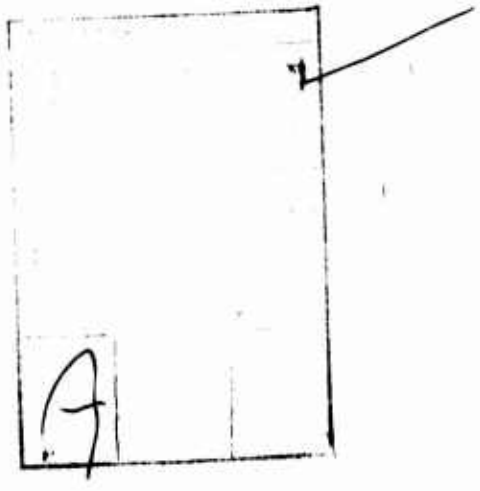
The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission, to manufacture, use, or sell any patented invention that may in any way be related thereto.

Trade names cited in this report do not constitute an official endorsement or approval of the use of such commercial hardware or software.

DISPOSITION INSTRUCTIONS

Destroy this report when no longer needed. Do not return it to the originator.



DEPARTMENT OF THE ARMY
U. S. ARMY AIR MOBILITY RESEARCH & DEVELOPMENT LABORATORY
EUSTIS DIRECTORATE
FORT EUSTIS, VIRGINIA 23604

This report, presented in two volumes, was prepared by Systems Associates, Incorporated, under terms of Contract DAAJ02-73-C-0013. The investigation was based on the conclusions of USAAMRDL Technical Reports 73-29, "U. S. Army Helicopter Hydraulic Servocylinder Reliability and Maintainability Investigation," and 73-35, "U. S. Army Helicopter Rod End Bearing Reliability and Maintainability Investigation." Those studies concluded that document deficiencies were contributing significantly to poor reliability and maintainability (R&M) characteristics of U. S. Army helicopter hydraulic servocylinders and rod end bearings.

This report presents the results of an effort to identify and recommend corrections to deficient documents used to specify design and test requirements and quality assurance provisions for hydraulic systems of Army aircraft. However, hydraulic system complexity and diversity precluded, from a cost and time standpoint, an in-depth assessment of failure and maintenance data to support the recommended document changes. Rather, a subjective approach was used which was based primarily on experience, available reports, and analyses. Therefore, this report should be viewed in that context and should be used accordingly.

Volume I contains the document deficiency analysis, study methodology, and list of documents examined during this program.

This volume contains recommended changes to military specifications, standards, and handbooks that can be used to help alleviate the recurrence of Army aircraft hydraulic system related R&M problems that may be a result of inadequate requirements documents. Pending appropriate changes to those documents, it is suggested that this report be used as a supplementary handbook, design guide, or attachment to system specifications by procuring agencies in the development of hydraulic systems of future Army aircraft.

Both volumes of this report are considered to be technically sound.

The Project Engineer for this contract was Donald R. Artis, Jr., of the Reliability and Subsystems Technical Area, Military Operations Technology Division, Eustis Directorate.

Task 1F162205A11903
Contract DAAJ02-73-C-0013
USAAMRDL Technical Report 73-63B
September 1973

U.S. ARMY HELICOPTER HYDRAULIC SYSTEM RELIABILITY AND MAINTAINABILITY INVESTIGATION

VOLUME II

SUPPLEMENTAL DESIGN GUIDE

Final Report

Systems Associates, Inc. Report 73-005

By

James L. Huffman

Prepared by

Systems Associates, Inc.
Long Beach, California

for

EUSTIS DIRECTORATE
U.S. ARMY
AIR MOBILITY RESEARCH AND DEVELOPMENT LABORATORY
FORT EUSTIS, VIRGINIA

ABSTRACT

This volume, entitled "Supplemental Design Guide", is a result of the investigation performed in Volume I, "Document Deficiency Analysis", of this report, which identifies deficiencies in military specifications and standards that may impact the reliability and maintainability of U.S. Army helicopters.

This volume provides supplementary information for each deficient document relating to design requirements, qualification testing, and quality assurance. The supplementary information to offset the most prevalent document deficiencies addressed helicopter design requirements relative to environmental conditions, reliability and maintainability programs, and safety. Environmental testing and reliability and maintainability requirements were also addressed.

This supplementary information may be used for future U.S. Army helicopter development programs and may be incorporated into existing hydraulic system related documents.

TABLE OF CONTENTS

DOCUMENT NUMERICAL INDEX

INTRODUCTION

The supplemental design guide (SDG) establishes the baseline hydraulic system documentation tree as well as reliability and maintainability related design, quality assurance, and testing guidelines for U.S. Army helicopter hydraulic systems.

Specifications were applied to the baseline hydraulic system described in Volume I, resulting in the baseline hydraulic system documentation tree. This documentation tree is intended to:

1. Establish the relationship of components within a system.

2. Logically group components to a particular system.

3. Identify the governing specifications of both systems and components.

The SDG information presented in this volume has three purposes:

1. To aid the procuring activity in choosing the applicable documents required to design helicopter hydraulic systems and/or constituent component parts.

2. To aid the designers in selecting the proper documents during the design, development, qualification and production of the applicable hydraulic system components.

3. To ensure that all design, qualification testing and quality assurance requirements adequately consider the reliability, maintainability, and availability requirements which are specified in the detailed design and system specifications.

This supplemental information is presented for each nonexistent or inadequate documentation requirement noted in the document deficiency analysis (Volume I of this report). This information is intended to supplement the existing military specifications and related documents. It is also anticipated that this information may be appended to procurement specifications prepared by Government contractors for their proposed suppliers.

Incorporation of these changes will provide assurances that the potential adverse impacts on reliability, maintainability, and availability due to document deficiencies have been mitigated to the greatest extent feasible, considering the overall operational requirements of Army helicopters.

BASELINE HYDRAULIC SYSTEM DOCUMENTATION TREE

The hydraulic system documentation tree presented on the following page is a graphic display of the various component levels within the composite hydraulic system. The components are grouped with respect to their individual functions within a particular subsystem, and the interface relationship between subsystems is defined. The documents noted on this tree are of the following two major categories:

1. System, General Requirements for

2. Component, Specific Requirements for

The system documents are used as guidelines for the performance factors of the specific system being designed. The constituent system components are also governed by these parameters. These documents refer to the operational parameters anticipated by in-service use. Although each document is directed toward a particular type or class of operation, there may be a redundancy between documents covering a given generic class.

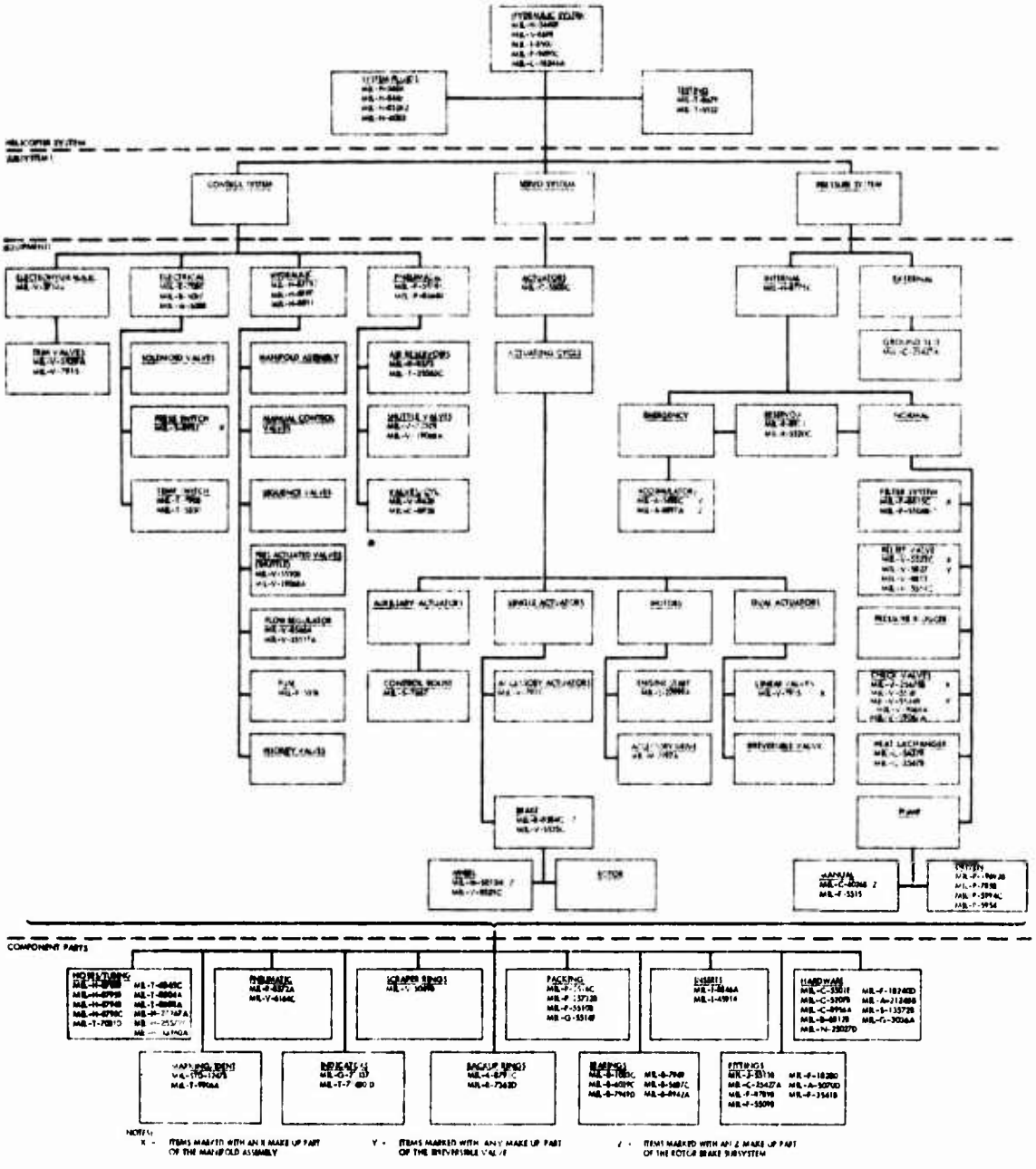
The component documents delineate specific performance requirements of the item being procured. Some generic classes, such as check valves, contain more than one document due to differences in operational parameters within various system applications. Descriptive generic titles for some classes of components (i.e., check valves, solenoids, and pumps) suffer somewhat in that they conflict with user nomenclature.

As an example, consider MIL-C-6026B, "Control Unit, Pressure Generating, Manually Operated, Aircraft Hydraulic Brake System". This unduly cumbersome and misleading title is contained in a specification that describes what users call a manual pump. Note also the MIL-C rather than MIL-P designation, which is further misleading.

Numerous component mechanical functions may be used to form a composite unit. An example of this is the hydraulic manifold, which is typically made up of solenoid valves, pressure switches, filters, relief valves, check valves, and linear valves.

The documentation tree can be used:

- To establish relationship of components within a system
- To logically group components within a particular system
- To identify the governing documents of both systems and components



Hydraulic System Documentation Tree.

Components that appear beneath a major system heading are dependent upon the requirements of the governing documents which appear at the higher levels of the tree. Documents which appear beneath a major subsystem heading are pertinent to and governed by that major group system specification. The subordinate or item documents on the tree are identified by the nomenclature criteria defined in TM 55-409 (Fundamentals of Aircraft Hydraulics, dated May 1971) and not by the generic title of the specific document. The equipment and component level documents are grouped by their generic classification within that particular subsystem. The document improvements are addressed in the following groups: (1) hydraulic system, (2) hydraulic control system, (3) hydraulic servo system, (4) hydraulic pressure system, and (5) hydraulic component parts.

Hardware component part documents were not addressed in this analysis as such; hardware is not amenable to the imposition of reliability and maintainability related requirements. These requirements are necessarily imposed by the document(s) governing the system or hardware in which the hardware is used.

Three documents analyzed during this study were found to be adequate with respect to reliability and maintainability related requirements. Consequently, supplemental design information is not required to use these documents. These documents are:

MIL-HDBK-692 (MR)	-	A Guide to the Selection of Rubber O-Rings, dated 20 October 1964
MIL-T-9906A	-	Tape, Aircraft Tube Identification Marker, Noncorrosive, Heat and Solvent Resistant, dated 2 March 1970
MIL-STD-1247B	-	Identification of Pipe, Hose and Tube Lines for Aircraft, Missile, and Space Systems, dated 20 December 1968

HYDRAULIC SYSTEM DOCUMENT IMPROVEMENTS

The documents governing hydraulic systems are as follows:

1. MIL-H-5440F, dated 18 January 1972, "Hydraulic Systems, Aircraft, Types I and II, Design and Installation Requirements for"

2. MIL-H-8890, dated 1 November 1961, "Hydraulic Components, Type III (-65° to +140°F), General Specification for"

3. MIL-H-8891, dated 1 November 1961, "Hydraulic System, Manned Flight Vehicles, Type III, Design, Installation, and Data Requirements for"

4. MIL-I-8500C, Amendment 1, dated 3 May 1972, "Interchangeability and Replaceability of Component Parts for Aerospace Vehicles"

5. MIL-S-8698(ASG), Amendment 1, dated 28 February 1958, "Structural Design Requirements, Helicopter"

6. MIL-F-9490C, Amendment 1, dated 9 March 1966, "Flight Control Systems; Design, Installation and Test of, Piloted Aircraft, General Specification for"

7. MIL-C-18244A, dated 1 December 1962, "Control and Stabilization System Automatic Piloted Aircraft, General Specification for"

MIL-H-5440F

The SDG information for this document is as follows:

1. Paragraph 3.3, delete and add the following:

   Fluid. Hydraulic fluid shall conform to MIL-H-5606 or MIL-H-83282 and shall dictate the selection and composition of the gaskets, seals, packing, and hoses used within the system. All components shall be drained of MIL-H-6083 fluid prior to installation in the aircraft.

2. Paragraph 3.10, delete and add the following:

   Component Design. All components used in the system shall conform to MIL-H-8775 and satisfactorily meet or exceed the minimum mission requirements of the helicopter as specified by the procuring agency.

3. Paragraph 3.12, delete and add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3.x, add the following:

Electromagnetic Interference. Conducted and radiated radio frequency noise shall not exceed the limits specified in MIL-I-6181. A filter shall be provided when specified on the applicable component drawing.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8890

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following

environmental conditions as specified in the detailed specification of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Component Sampling. Sampling shall be accomplished in accordance with the procedures established in MIL-STD-105.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed specification have not been exceeded.

9. Paragraph 4.6.4, delete and add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

MIL-H-8891

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

2. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specification of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

4. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

6. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

9. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

10. Paragraph 3.x, add the following:

Test Witnesses. Before conducting a contractually required test, the procuring activity shall be notified so that test witnesses can be assigned. In addition, the procuring activity shall be informed whether or not interpretation of the test is likely to require engineering knowledge and experience.

11. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

12. Paragraph 4.x, add the following:

Component Sampling. Sampling shall be accomplished in accordance with the procedures established in MIL-STD-105.

13. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

14. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

15. Paragraph 4.x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with the requirements of MIL-Q-9858.

MIL-I-8500C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

MIL-S-8698

The SDG information for this document is as follows:

Paragraph 3.1.2.1, delete and replace with the following:

Yield. The minimum yield factor of safety for Naval aircraft shall be 1.15, and for Army and Air Force aircraft shall be 1.0.

MIL-F-9490C

1. Paragraph 3.2.11.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

MIL-C-18244A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

3. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specification of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

4. Paragraph 3.x, add the following:

   Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design critieria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

8. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

TESTING/DEMONSTRATION REQUIREMENTS

The documents governing hydraulic system testing and demonstration requirements are as follows:

1. MIL-T-5522C, dated 25 March 1966, "Test Procedure for Aircraft Hydraulic and Pneumatic Systems, General"

2. MIL-T-8679, dated 5 March 1964, "Test Requirements, Ground, Helicopter"

MIL-T-5522C

The SDG information for this document is as follows:

1. Paragraph 4.3.1.2, delete and insert the following:

   Test Plan Approval. The contractor shall submit detailed test plans and procedures to the procuring agency for approval and comment at least 60 days prior to start of ground or flight test. The procuring agency shall review and comment upon the detailed test plan. The contractor shall incorporate all pertinent procuring agency comments prior to formal approval and commencement of the test.

2. Paragraph 4.x, add the following:

   Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

MIL-T-8679

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

2. Paragraph 4.x, add the following:

   Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability

and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

3. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

HYDRAULIC RUBBER COMPONENTS

The document governing hydraulic rubber components is as follows:

MIL-R-7362D, dated 8 July 1971, "Rubber, Synthetic, Solid, Sheet, Strip and Fabricated Parts, Synthetic Oil Resistant"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

2. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

3. Paragraph 3.7, delete and replace with the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movement of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 4.x, add the following:

Test Witnesses. Before conducting a contractually required test, the procuring activity shall be notified so that test witnesses can be assigned. In addition, the procuring activity shall be informed whether or not interpretation of the test is likely to require engineering knowledge and experience.

8. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

9. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

HYDRAULIC SYSTEM FLUIDS

The documents governing hydraulic system fluids are as follows:

1. MIL-H-5606C, dated 30 September 1971, "Hydraulic Fluid, Petroleum Base; Aircraft, Missile and Ordnance"

2. MIL-H-8446B, Amendment 1, dated 16 July 1959, "Hydraulic Fluid, Non-Petroleum Base, Aircraft"

3. MIL-H-83282, Amendment 1, dated 6 June 1972, "Hydraulic Fluid, Fire-Resistant, Synthetic Hydrocarbon Base, Aircraft"

4. MIL-H-6083C, Amendment 2, dated 6 June 1969, "Hydraulic Fluid, Petroleum Base for Preparation and Testing"

MIL-H-5606C

The SDG information for this document is as follows:

1. Paragraph 5.2, add the following statements to required container markings:

   Marking. FLAMMABLE; KEEP CONTENTS AWAY FROM OPEN FLAME. CONTENTS CAN CAUSE SKIN IRRITATION; USE CAUTION WHEN HANDLING.

2. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

MIL-H-8446B

The SDG information for this document is as follows:

Paragraph 5.2, add the following statement to required container marking:

Marking. CONTENTS CAN CAUSE SKIN IRRITATION; USE CAUTION WHEN HANDLING.

MIL-H-83282

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Product Identification. Fluid shall have a distinctive tint to avoid the possibility of system adulteration.

2. Paragraph 4.3.1, add the following:

   Rejection and Retest. Failure of any sample of oil to conform to any one of the requirements of this specification shall be cause for the rejection of the lot represented. Fluid which has been rejected may be reworked or replaced to correct the defects and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished to the representative of the procuring activity. Fluids rejected after retest shall not be resubmitted without the specific approval of the procuring activity.

3. Paragraph 5.2, add the following statement to required container marking:

   Marking. CONTENTS CAN CAUSE SKIN IRRITATION; USE CAUTION WHEN HANDLING.

MIL-H-6083C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be in accordance with high-grade commercial practice covering this type of material. The finished fluid shall be homogeneous and free from suspended matter, grit or other adulteration.

2. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill

requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

3. Paragraph 4.6, delete and replace with the following:

Rejection and Retest. Failure of any sample of oil to conform to any one of the requirements of this specification shall be cause for the rejection of the lot represented. Fluid which has been rejected may be reworked or replaced to correct the defects and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished to the representative of the procuring activity. Fluids rejected after retest shall not be resubmitted without the specific approval of the procuring activity.

HYDRAULIC CONTROL SYSTEM DOCUMENT IMPROVEMENTS

ELECTROHYDRAULIC COMPONENTS

The documents governing electrohydraulic components are as follows:

1. MIL-V-27162 (USAF), dated 6 October 1959, "Valves, Servo Control, Electrohydraulic, General Specifications for"

2. MIL-H-8775C, dated 8 January 1964, "Hydraulic System Components, Aircraft and Missiles, General Specification for"

MIL-V-27162

The SDG information for this document is as follows:

1. Paragraph 3.5.2, delete and replace with the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specification of the procuring agency.

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.12, delete and replace with the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as

reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual components shall meet the electromagnetic interference requirements of MIL-STD-461.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability

and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8775C

The SDG information for this document is as follows:

1. Paragraph 3.11, delete and replace with the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

4. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill

requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Trim Valves

The document governing trim valves is as follows:

MIL-V-5529A, Amendment 2, dated 28 June 1956, "Valves, Hydraulic Directional Control, Rotary Selector"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

5. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

7. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

ELECTRICAL COMPONENTS

The specifications governing electrical components are as follows:

1. MIL-E-7080B, Amendment 3, dated 29 April 1968, "Electrical Equipment, Aircraft, Selections and Installation of"

2. MIL-W-5088E, dated 28 March 1972, "Wiring, Aircraft, Selection and Installation of"

3. MIL-B-5087B, Amendment 2, dated 31 August 1970, "Bonding, Electrical, and Lightning Protection, for Aerospace Systems"

MIL-E-7080B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specification of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring agency.

3. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill

requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill

requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-B-5087B

The SDG information for this document is as follows:

Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

Pressure Switches

The specification governing pressure switches is as follows:

MIL-S-8932, dated 28 January 1965, "Switches, Pressure, Aircraft, General Specification for"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specification of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

> Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

6. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, delete and replace with the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

8. Paragraph 4.x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

9. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

Temperature Switches

The specification governing temperatures switches is as follows:

MIL-T-7990B, dated 26 April 1966, "Transmitter, Temperature, Electrical Resistance, -70° to +300°C"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:
>
> a. Temperature range
>
> b. Relative humidity
>
> c. Altitude range
>
> d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

HYDRAULIC COMPONENTS

The document governing hydraulic components is as follows:

MIL-H-8775C, dated 8 January 1964, "Hydraulic System Components, Aircraft and Missiles, General Specification for"

The SDG information for this document is contained on page 27.

Pressure-Activated Valves (Shuttle)

The specifications governing pressure switches are as follows:

1. MIL-V-5530B, Amendment 4, dated 24 March 1970, "Valves, Aircraft, Hydraulic Shuttle"

2. MIL-V-19068A (ASG), dated 20 August 1955, "Valves, Shuttle, Hydraulic, Aircraft, Type II Systems"

MIL-V-5530B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a

reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-19068A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency·

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

6. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

7. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

8. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

9. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

10. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

11. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

12. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

Flow Regulators

The specifications governing flow regulators are as follows:

1. MIL-V-8566A, dated 24 June 1964, "Valves, Aircraft Hydraulic Flow Regulator"

2. MIL-V-25517A (ASG), dated 23 July 1959, "Valve, Aircraft Hydraulic Restrictor"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.x, add the following:

   Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

> Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

6. Paragraph 3.x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

7. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

8. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

9. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.7, delete and add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The

quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.4.3, delete and replace with the following:

Rejection and Retests. An item failing test shall not be submitted to retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

Fuses

The specification governing fuses is as follows:

> MIL-F-5508B, Amendment 1, dated 20 August 1971, "Fuses, Aircraft Automatic Quantity-Measuring, Hydraulic"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:
>
> a. Temperature range
>
> b. Relative humidity
>
> c. Altitude range
>
> d. Vibration
>
> e. Exposure to salt-sea atmosphere
>
> f. Shock forces
>
> g. Acceleration
>
> h. Sand particles
>
> i. Fungus growth

2. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

6. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

7. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

8. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or

component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

9. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test

parameters shall be in accordance with the applicable design specification.

PNEUMATIC COMPONENTS

The specifications governing pneumatic components are as follows:

1. MIL-P-5518C, Interim Amendment 1, dated 3 December 1968, "Pneumatic Systems, Aircraft; Design, Installation, and Data Requirements for"

2. MIL-P-8564D, dated 18 November 1970, "Pneumatic System Components, Aeronautical, General Specification for"

MIL-P-5518C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

2. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

3. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

4. Paragraph 3.x, add the following:

Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

5. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

6. Paragraph 3.10, delete and replace with the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

7. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

8. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for a standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

9. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

10. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

11. Paragraph 4.x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with MIL-Q-9858.

12. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

13. Paragraph 4.x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

14. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

15. Paragraph 4.x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

MIL-P-8564D

The SDG information for this document is as follows:

1. Paragraph 3.1, delete entire paragraph.

2. Paragraph 3.3.20.2.7, delete and replace with the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

3. Paragraph 3.11, delete and replace with the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 4.5.15, delete and add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/fight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3.x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the

corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

Air Reservoir

The specifications governing air reservoirs are as follows:

1. MIL-R-8573A, Amendment 4, dated 14 March 1968, "Reservoirs, Air, Nonshatterable Steel"

2. MIL-T-25363C, dated 2 June 1969, "Tank Pneumatic Pressure, Aircraft, Glass Fiber"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided.

The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-T-25363C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of

MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Pneumatic Valves/Cylinders

The specifications governing pneumatic valves and cylinders are as follows:

1. MIL-C-8838 (ASG), dated 3 June 1958, "Cylinder, Pneumatic Actuating, Aircraft Utility System, General Specification for"

2. MIL-V-5528A, dated 26 September 1951, "Valves, Hydraulic Controllable Check"

MIL-C-8838

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to nonstandard components wherever they will perform the function required by the system.

4. Paragraph 3.7, delete and replace with the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The

quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

10. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.10, delete and replace with the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of

components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

5. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet

the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

8. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

HYDRAULIC SERVO SYSTEM DOCUMENT IMPROVEMENTS

ACTUATORS

The specifications governing hydraulic actuators are as follows:

1. MIL-C-5503C, Amendment 4, dated 26 April 1972, "Cylinders; Aeronautical, Hydraulic Actuating, General Requirements for"

2. MIL-H-8775C, dated 8 January 1964, "Hydraulic System Components, Aircraft and Missiles, "General Specifications for"

MIL-C-5503C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The

reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8775C

The SDG information for this document is contained on page 27.

Single Actuators

Brakes

The specification governing brakes is as follows:

MIL-B-8584C, dated 12 August 1970, "Brake Systems, Wheel, Aircraft, Design of"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

4. Paragraph 3.4, delete and replace with the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of

operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with MIL-Q-9858.

10. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

11. Paragraph 4.x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

12. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

13. Paragraph 4.x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accorance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

Wheel Brakes

The specifications governing wheel brakes are as follows:

1. MIL-V-5525C, dated 21 October 1959, "Valves, Aircraft Power Brake"

2. MIL-W-5013H, Amendment 1, dated 14 September 1971, "Wheel and Brake Assemblies: Aircraft"

MIL-V-5525C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to non-standard components wherever they will perform the function required by the system.

4. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

5. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

6. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing.

7. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

8. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools

and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

9. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

   Standard Components. Standard AN, JAN, or MS components shall be used in preference to non-standard components wherever they will perform the function required by the system.

4. Paragraph 3.11, delete and replace with the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified

service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.4.4, delete and replace with the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.4.5, delete and replace with the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

11. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

Motors

Engine Start Motors

The specification governing engine start motors is as follows:

MIL-S-22999A, dated 3 June 1965, "Starter, Aircraft Engine, Hydraulic"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely

affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Accessory Drive Motors

The specification governing hydraulic motors is as follows:

MIL-M-7997A, dated 23 February 1961, "Motors, Aircraft Hydraulic, Constant Displacement"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

7. Paragraph 4.x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

HYDRAULIC PRESSURE SYSTEM DOCUMENT IMPROVEMENTS

EXTERNAL

Coupling, Quick Disconnect

The specification governing quick-disconnect couplings is as follows:

MIL-C-25427A, dated 8 January 1963, "Coupling Assembly, Hydraulic, Self-Sealing, Quick Disconnect"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall

be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

5. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates,

downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

INTERNAL

Reservoirs, Hydraulic

The specifications governing hydraulic reservoirs are as follows:

1. MIL-R-5520C, Amendment 1, dated 21 March 1969, "Reservoirs; Aircraft, Hydraulic, Non-Separated Type"

2. MIL-R-8931, Amendment 1, dated 10 May 1972, "Reservoirs; Aircraft and Missile, Hydraulic, Separated Type"

MIL-R-5520C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The

quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

5. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring

activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-R-8931

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.3.1, delete and replace with the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring

activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

   Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

8. Paragraph 4.x, add the following:

   Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

   a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

   b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Accumulators

The specifications governing hydraulic accumulators are as follows:

1. MIL-A-5498C, dated 25 February 1957, "Accumulators, Hydraulic, Cylindrical, 3,000 PSI, Aircraft, Type II Systems"

2. MIL-A-8897A, dated 14 May 1963, "Accumulators, Hydraulic, Cylindrical, 3,000 PSI, Aircraft, Type II Systems"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

5. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Qualitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The

reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

•b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-A-8897A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation

as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Pumps

Driven Pumps

The specifications governing driven hydraulic pumps are as follows:

1. MIL-P-19692B, dated 3 July 1963, "Pumps, Hydraulic, Variable Delivery, General Specification for"

2. MIL-P-5994C, dated 3 May 1972, "Pump, Hydraulic, Electric-Motor-Driven, Variable Delivery, General Specification for"

3. MIL-P-7858, dated 17 April 1956, "Pump, Hydraulic, Power Driven, Fixed Displacement"

MIL-P-19692B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, sub-assemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing.

Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be

furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-P-5994C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3. x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3. x, add the following:

Electromagnetic Interference. The individual equipments shall meet the electromagnetic interference requirements of MIL-STD-461.

6. Paragraph 3. x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/ system development description or specification.

7. Paragraph 4. x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

MIL-P-7858

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the

nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

Manual Pumps

The specifications governing manual hydraulic pumps are as follows:

1. MIL-P-5515C, dated 17 May 1972, "Pump, Hydraulic, Ram, Hand Driven"

2. MIL-C-6026B, dated 9 October 1959, "Control Unit, Pressure Generating, Manually Operated, Aircraft Hydraulic Brake System"

MIL-P-5515C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3. x, add the following:

> Interchangeability. Like assemblies, sub-assemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3. x, add the following:

> Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

4. Paragraph 3. x, add the following:

> Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3. x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3. x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements

shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

9. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-C-6026B

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

2. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, sub-assemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

3. Paragraph 3.x, add the following:

> Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

4. Paragraph 3.x, add the following:

> Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

5. Paragraph 3.x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

6. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements

shall be in accordance with MIL-STD-785, and as specified in the detail specification.

7. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

8. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/ system development description or specification.

9. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Filters

The specifications governing hydraulic filters are as follows:

1. MIL-F-5504B, dated 3 April 1969, "Filters and Filter Elements, Fluid Pressure, Hydraulic Micronic Type"

2. MIL-F-8815C, dated 29 September 1972, "Filter and Filter Elements, Fluid Pressure, Hydraulic Line, 15 Micron Absolute and 5 Micron Absolute, Type II Systems"

MIL-F-5504B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel

of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

2. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

3. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-F-8815C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected.

Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.4, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

5. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Relief Valve

The specifications governing hydraulic relief valves are as follows:

1. MIL-V-5519C, Amendment 1, dated 5 August 1964, "Valves, Aircraft Hydraulic Unloading"

2. MIL-V-5523C, Amendment 1, dated 2 June 1971, "Valve; Relief, Hydraulic Pressure"

3. MIL-V-5527A, dated 14 May 1951, "Valves; Aircraft, Hydraulic Thermal Expansion Relief"

4. MIL-V-8813(ASG), dated 20 November 1957, "Valves: Aircraft, Hydraulic Pressure Relief, Type II Systems"

MIL-V-5519C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-5523C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-5527A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

3. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-8813

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3. Paragraph 3. x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3. x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 4. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 4. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools

and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

8. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

9. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be

performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

Check Valves

The specifications governing hydraulic check valves are as follows:

1. MIL-V-5524B(ASG), Amendment 2, dated 21 September 1959, "Valves, Check, Hydraulic, Aircraft Type I Systems"

2. MIL-V-5528A, dated 26 September 1951, "Valves, Hydraulic Controllable Check"

3. MIL-V-19067A(ASG), dated 30 April 1957, "Valves, Check, Controllable, Hydraulic Aircraft, Type II Systems"

4. MIL-V-19069A(ASG), Amendment 1, dated 21 September 1959, "Valves, Check, Hydraulic, Aircraft, Type II Systems"

5. MIL-V-25675B, Amendment 4, dated 2 May 1972, "Valves, Check, Miniature, Hydraulic, Aircraft and Missiles"

MIL-V-5524B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified

service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 4.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 4.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel

of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

8. Paragraph 4. x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with MIL-Q-9858.

9. Paragraph 4. x, add the following:

Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

10. Paragraph 4. x, add the following:

Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

a. Temperature range

b. Relative humidity

c. Altitude range

d. Vibration

e. Exposure to salt-sea atmosphere

f. Shock forces

g. Acceleration

h. Sand particles

i. Fungus growth

11. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

12. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-19067A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3. Paragraph 3.x, add the following:

Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools

and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

8. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

9. Paragraph 4.x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with MIL-Q-9858.

10. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be

performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-19069A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

4. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available

in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

5. Paragraph 4.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

6. Paragraph 4.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is neceesary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

7. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

8. Paragraph 4.x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

9. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-25675B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and

MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description of specification.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Quality Assurance Requirements. The quality assurance requirements of equipment furnished by this specification shall be in accordance with MIL-Q-9858.

8. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

The SDG information for this document is contained on page 70.

Heat Exchangers

The specifications governing heat exchangers are as follows:

1. MIL-C-5637B, dated 15 September 1964, "Cooler, Lubricating Oil, Petroleum Base, Aircraft Engine, Tubular"

2. MIL-C-25478, Amendment 1, dated 14 February 1957, "Coolers, Lubricating Oil, Aircraft Engine, Synthetic Oil, General Specification for"

MIL-C-5637B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to

injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicpter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring

activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-C-25478

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the

overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

HYDRAULIC COMPONENT PARTS DOCUMENT IMPROVEMENTS

HOSES/TUBING

The specifications governing hydraulic hoses and tubing are as follows:

1. MIL-H-8788B, dated 12 July 1968, "Hose, Hydraulic, High Pressure"

2. MIL-H-8795B, Amendment 1, dated 24 June 1968, "Hose Assemblies, Rubber, Hydraulic, Fuel, and Oil Resistant"

3. MIL-H-8794D, dated 4 February 1971, "Hose, Rubber, Hydraulic, Fuel, and Oil Resistant"

4. MIL-H-8790C, Amendment 1, dated 24 June 1968, "Hose Assemblies, Rubber, Hydraulic, High Pressure (3,000 PSI)"

5. MIL-H-27267A, Amendment 3, dated 11 June 1971, "Hose, Tetrafluoroethylene, High Temperature, Medium Pressure"

6. MIL-H-25579C, Amendment 1, dated 16 August 1971, "Hose Assembly, Tetrafluoroethylene, High Temperature, Medium Pressure, General Requirements for"

7. MIL-H-38360A, Amendment 1, dated 21 November 1967, "Hose Assembly, Tetrafluoroethylene, High Temperature, High Pressure, Hydraulic and Pneumatic"

8. MIL-T-7081D, Amendment 4, dated 23 June 1971, "Tube, Aluminum Alloy, Seamless, Round, Drawn, 6061 Aircraft Hydraulic Quality"

9. MIL-T-6845C, Amendment 2, dated 16 October 1970, "Tubing, Steel, Corrosion-Resistant (304), Aerospace, Vehicle Hydraulic System, 1/8 Hard Condition"

10. MIL-T-8504A, Amendment 2, dated 14 April 1971, "Tubing, Steel, Corrosion-Resistant (304), Aerospace Vehicle Hydraulic Systems, Annealed, Seamless and Welded"

11. MIL-T-8808A(ASG), Amendment 1, dated 28 July 1969, "Tubing, Steel, Corrosion-Resistant (18-8 Stabilized), Aircraft Hydraulic Quality"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be

made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8795B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design

criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8794D

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

> Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design

criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-8790C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would

be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-27267A

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability

and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-25579C

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3. x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3. x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-H-38360A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being

accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability

and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-T-7081D

The SDG for this document is as follows:

1. Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability

is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-T-6845C

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3. x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 4. x, add the following:

   Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

4. Paragraph 4. x, add the following:

   Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall

also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-T-8504A

The SDG for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity.

Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-T-8808A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing.

Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

7. Paragraph 4.x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the p ocuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

8. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.
>
> a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.
>
> b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

PNEUMATIC COMPONENTS

The specifications governing pneumatic components are as follows:

1. MIL-R-8572A(AER), dated 5 October 1954, "Reducers, Pneumatic Pressure, Aircraft"

2. MIL-V-6164C, dated 2 June 1970, "Valve, Aircraft, Air, High Pressure"

MIL-R-8572A

The SDG for this document is as follows:

1. Paragraph 3.x, add the following:

   Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

2. Paragraph 3.x, add the following:

   Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

4. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

5. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly,

reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

6. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

7. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

8. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

9. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability

and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-V-6164C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-883.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

6. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

INDICATORS

The specification governing indicators is as follows:

MIL-G-23337(WR), Amendment 3, dated 15 May 1965, "Gages, Pressure, Dial Indicating"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring

specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall bs used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Responsibility for Inspection. The supplier shall implement an inspection system in accordance with MIL-I-45208.

6. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability

and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

SCRAPERS

The specification governing hydraulic scrapers is as follows:

MIL-S-5049B, Amendment 2, dated 21 December 1966, "Scrapers, Piston Rod"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

BACKUP RINGS

The specification governing hydraulic backup retainer rings is as follows:

MIL-R-8791C, Amendment 1, dated 31 March 1971, "Retainer, Packing, Hydraulic, and Pneumatic Tetrafluoroethylene Resin"

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring

activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

PACKING

The specifications governing hydraulic packings are as follows:

1. MIL-G-5514F, dated 15 January 1969, "Gland Design: Packings, Hydraulic, General Requirements for"

2. MIL-P-5516C, Amendment 2, dated 29 March 1971, "Packing, Preformed, Petroleum, Hydraulic Fluid Resistant, 160°F"

3. MIL-P-25732B, dated 11 January 1967, "Packing, Preformed, Petroleum, Hydraulic Fluid Resistant, 275°F"

4. MIL-P-5510B, Amendment 2, dated 18 June 1971, "Packing, Preformed, Straight Thread Tube Fitting Boss"

MIL-G-5514F

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3.x, add the following:

Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

4. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

5. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall

be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

6. Paragraph 4.x, add the following:

Test Plan Approval. The contractor shall submit detailed test plans and procedures to the procuring agency for approval and comment at least 60 days prior to start of ground or flight test. The procuring agency shall review and comment upon the detailed test plan. The contractor shall incorporate all pertinent procuring agency comments prior to formal approval and commencement of the test.

MIL-P-5516C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-P-25732B

The SDG information for this document is as follows:

Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

MIL-P-5510B

The SDG information for this document is as follows:

Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

BEARINGS

The specifications governing bearings used in the hydraulic system are as follows:

1. MIL-B-1083C, dated 3 March 1964, "Balls, Bearings, Ferrous and Nonferrous (for Use in Bearings and Valves)"
2. MIL-B-5687C, dated 12 June 1962, "Bearings, Sleeve; Thrust, Sintered, Metal Powder, Oil-Impregnated"
3. MIL-B-6039C, dated 7 July 1971, "Bearing, Double Row, Ball, Sealed Rod End, Antifriction, Self-Aligning"
4. MIL-B-7949D, Supplement 1A, dated 8 December 1971, "Bearings, Ball, Airframe, Antifriction"
5. MIL-B-8942A, Amendment 1, dated 14 August 1971, "Bearings, Plain TFE Lined, Self-Aligning"

MIL-B-1083C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

> Workmanship. Workmanship shall be sufficient to insure proper operation and to meet any specified service life of the systems and components. The quality of the workmanship shall be uniformly high and shall not depreciate from the level demonstrated during the preproduction tests.

3. Paragraph 3. x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4. x, add the following:

> Test Witnesses. Before conducting a contractually required test, the procuring activity shall be notified so that test witnesses can be assigned. In addition, the procuring activity shall be informed whether or not interpretation of the test is likely to require engineering knowledge and experience.

5. Paragraph 4. x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

MIL-B-5687C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative

human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-B-6039C

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-5800 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall

also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-B-7949D

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall

be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 3.x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

5. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the

maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-B-8942A

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

   Environmental Conditions. The item shall be capable of satisfactory operation when subjected to the following environmental conditions as specified in the detailed specifications of the procuring agency:

   a. Temperature range

   b. Relative humidity

   c. Altitude range

   d. Vibration

   e. Exposure to salt-sea atmosphere

   f. Shock forces

   g. Acceleration

   h. Sand particles

   i. Fungus growth

2. Paragraph 3. x, add the following:

   Safety. Systems and components shall be designed to provide a maximum of safety to personnel during the course of installation and preflight testing. Adequate precautionary warnings and information shall be affixed to components when considered essential. Precautionary warnings and information shall also be available in the systems or components operating installations used for preflight testing. Provisions shall be made to prevent personnel from being accidentally subjected to injurious voltages or current, pressures, temperatures, or movements of components. Safety requirements shall be in accordance with MIL-STD-882.

3. Paragraph 3. x, add the following:

> Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraphs 4. 6. 6, 4. 6. 7, and 4. 6. 8 delete, and Paragraph 4. 6. x, add the following:

> Environmental Testing. Equipment designed for helicopters shall be subjected to environmental testing in accordance with MIL-STD-810. The specific test parameters shall be in accordance with the applicable design specification.

6. Paragraph 4. x, add the following:

> Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

7. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

INSERTS

The specifications governing inserts are as follows:

1. MIL-I-8846A, dated 6 November 1969, "Inserts, Screw-Thread, Helical Coil"

2. MIL-I-45914, Amendment 1, dated 25 November 1970, "Inserts, Screw-Thread – Locked In, Key Locked"

MIL-I-8846A

The SDG information for this document is as follows:

Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring agency.

MIL-I-45914

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of

MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

Identification of Product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

FITTINGS

The specifications governing fittings are as follows:

1. MIL-F-5509B, Supplement 1, dated 22 January 1963, "Fittings, Fluid Tube, Fluid Connection"

2. MIL-F-18280C, Amendment 1, dated 23 April 1971, "Fittings, Flareless Tube, Fluid Connection"

3. MIL-F-8789B, dated 20 May 1964, "Fitting End, Attachable, Hydraulic and Pneumatic High-Pressure Hose"

4. MIL-F-27272A, Amendment 1, dated 6 March 1969, "Fittings, Tetrafluoroethylene Hose, High Temperature, Medium Pressure, General Requirements for"

5. MIL-J-5513B, dated 13 May 1971, "Joints, Hydraulic Swivel"

6. MIL-C-25427A, Amendment 1, dated 8 January 1963, "Coupling Assembly, Hydraulic, Self-Sealing, Quick Disconnect"

7. MIL-A-5070D, Supplement 1, dated 11 September 1970, "Adapter, Hose to Tube, Pipe and Flange, Reusable, Hydraulic, Fuel and Oil Lines"

MIL-F-5509B

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability

is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3. x, add the following:

Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

4. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-F-18280C

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

> Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

> Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

> Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

> Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in

accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-F-8789B

The SDG information for this document is as follows:

1. Paragraph 3. x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3. x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3. x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-F-27272A

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

2. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

3. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electrohydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

4. Paragraph 4.x, add the following:

   Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and

maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-J-5513B

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can

easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3. x, add the following:

Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4. x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4. x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, down-time, and maintenance man-hours given in the detailed system specification have not been exceeded.

MIL-C-25427A

The SDG information for this document is found on page 90.

MIL-A-5070D

The SDG information for this document is as follows:

1. Paragraph 3.x, add the following:

   Interchangeability. Like assemblies, subassemblies, and replaceable parts shall meet the requirements of MIL-I-8500 regardless of manufacturer or supplier. Items which are not functionally interchangeable shall not be physically interchangeable unless specifically approved by the procuring activity.

2. Paragraph 3.x, add the following:

   Reliability. Reliability of equipment furnished under this specification shall be that which is necessary to achieve the required mission and system reliability of the overall helicopter. Equipment installation shall provide for standardization and simplicity of operation as long as reliability is not adversely affected. Reliability requirements shall be in accordance with MIL-STD-785, and as specified in the detail specification.

3. Paragraph 3.x, add the following:

   Maintainability. The availability and maintenance man-hours/flight hour required of the hydraulic system or component shall be that which is necessary to achieve the required inherent and achieved availability of the overall helicopter. The item shall be capable of disassembly, reassembly, service maintenance, and inspection with Federally stocked tools and equipment. Designs requiring specially designed maintenance tools and equipment shall be avoided. The item shall be constructed so that adjustments and repairs of field-adjustable components can easily be made by personnel of operating units and overhaul bases. The equipment shall meet the requirements of MIL-STD-473.

4. Paragraph 3.x, add the following:

   Human Engineering. Human engineering design criteria and principles shall be applied in the design of electro-hydraulic equipment so as to achieve safe, reliable, and effective performance by operator, maintenance and control

personnel, and to optimize personnel skill requirements and training time. MIL-H-46855 and MIL-STD-1472 shall be used as guidelines in applying human engineering design criteria for electrohydraulic equipment. Quantitative human engineering requirements shall be as stated in the end item/system development description or specification.

5. Paragraph 4.x, add the following:

Rejection and Retests. An item failing test shall not be submitted for retest without complete information on the corrective action taken subsequent to the failure. This information shall be furnished to the procuring activity. Depending upon the nature of the failure encountered and corrective action required and at the option of the procuring activity, the rework or modifications accomplished shall also be incorporated into the other test samples. Where rework or modification would be sufficient to affect performance, tests already completed shall be repeated in the specified order at the option of the procuring agency.

6. Paragraph 4.x, add the following:

Reliability and Maintainability Demonstration. Tests shall be performed to show that the system can meet the reliability and maintainability guarantees. The reliability and maintainability demonstration shall be performed in accordance with an approved test plan before a Government witness.

a. Test Plan. To document test conditions and end points to be met during demonstration, a reliability and maintainability test plan shall be prepared and forwarded to the procuring agency for approval.

b. Acceptance Criteria. The quantitative reliability and maintainability requirements have been met if the maximum permissible values of failure rates, downtime, and maintenance man-hours given in the detailed system specification have not been exceeded.

GLOSSARY

Availability	A measure of the degree to which an item is in the operable and committable state at the start of the mission, when the mission is called for at an unknown (random) point in time.
Demonstrated	That which has been proven by the use of concrete evidence gathered under specified conditions.
Failure	The inability of an item to perform within previously specified limits.
Failure Rate	The number of failures of an item per unit measure of life (cycles, time, miles, events, etc.) as applicable for the item.
Human Engineering	The area of human factors which applies scientific knowledge to the design of items to achieve effective man-machine integration and utilization.
Human Factors	A body of scientific facts about human characteristics. The term covers all biomedical and psychosocial considerations; it includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluation.
Inherent	Achievable under ideal conditions, generally derived by analysis, and potentially present in the design.
Maintainability	A characteristic of design and installation which is expressed as the probability that an item will be retained in or restored to a specified condition within a given period of time, when the maintenance is performed in accordance with prescribed procedures and resources.

Maintenance	All actions necessary for retaining an item in, or restoring it to, a specified condition.
Maintenance Man-Hours per Flight Hour	The number of maintenance hours expended per flight hour to keep the helicopter flying.
Mean-Time-Between-Failures (MTBF)	For a particular interval, the total functioning life of a population of an item divided by the total number of failures within the population during the measurement interval. The definition holds for time, cycles, miles, events, or other measures of life units.
Mean-Time-To-Repair (MTTR)	The total corrective maintenance time divided by the total number of corrective maintenance actions during a given period of time.
Quality Assurance	Quality control inspections subsequent to maintenance or manufacture at vendors' or manufacturers' facilities.
Reliability	The probability that an item will perform its intended function for a specified interval under stated conditions.
Safety	The conservation of human life and its effectiveness, and the prevention of damage to items, consistent with mission requirements.